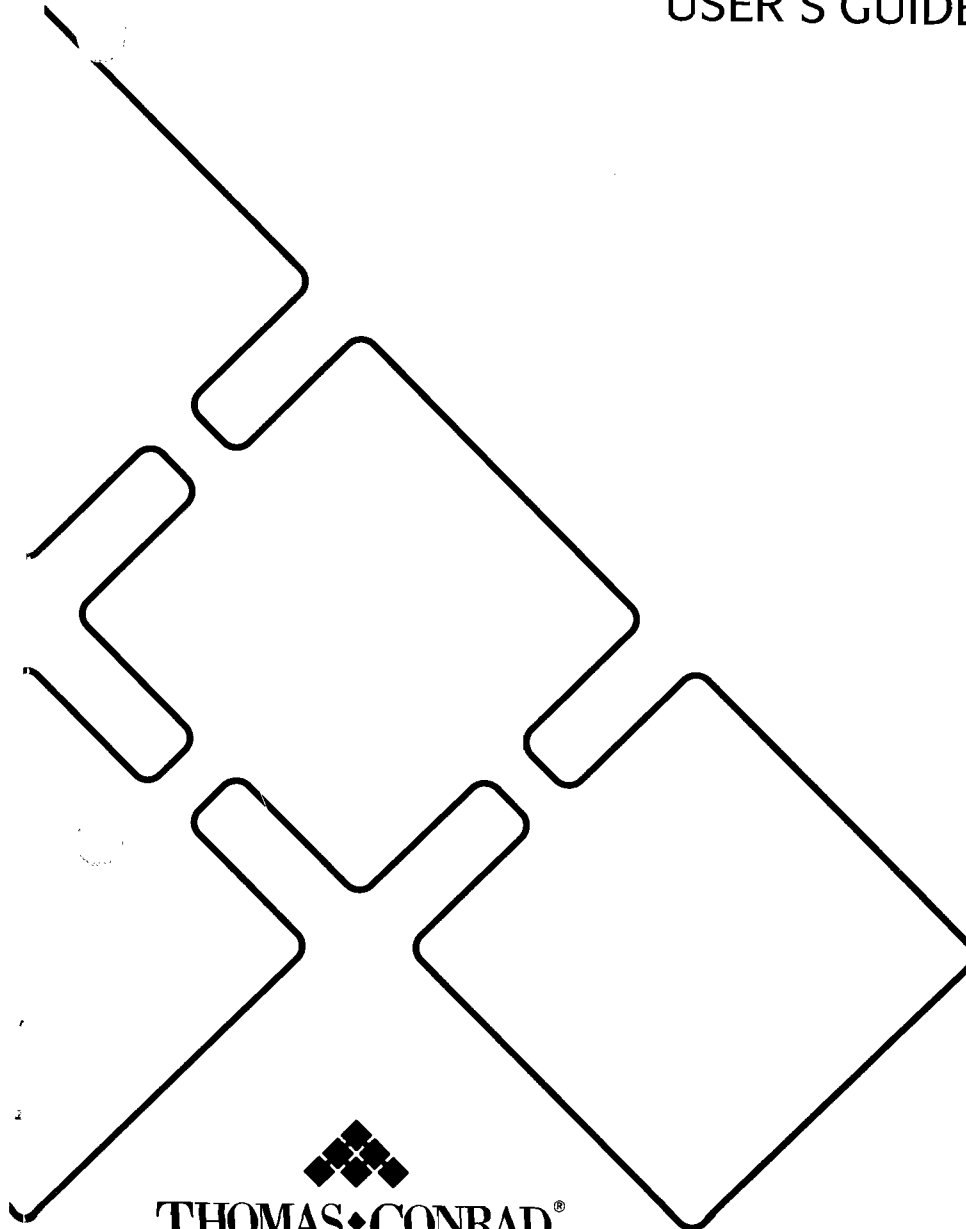


TC6245
ARC®-CARD/AT
USER'S GUIDE



THOMAS-CONRAD CORPORATION
TC6245 ARC-CARD/AT
USER'S GUIDE

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CHAPTER 1

INTRODUCTION

The TC6245 ARC-CARD/AT is a 16-bit high performance Network Interface Card that connects AT® computers to an ARCNET® local area network (LAN). Network throughput increases considerably over 8-bit interface cards since the TC6245 performs 16-bit transfers, instead of 8-bit, between the card and the AT data bus. The TC6245 is available in the following media interface versions:

- ☐ TC6245-AIO ARC-CARD/AT: All-In-One media adapter for any coax, high impedance, Twisted-Pair Plus, or ordinary twisted-pair network installation.
- ☐ TC6245 ARC-CARD/AT: Standard 93Ω RG62/U coaxial media adapter for distributed star topology installation.
- ☐ TC6245-HZ ARC-CARD/AT: High Impedance RG62/U coaxial media adapter for bus topology installation.
- ☐ TC6245-TP+ ARC-CARD/AT: Twisted-Pair Plus™ media adapter for star or bus installation.
- ☐ TC6245-OTP ARC-CARD/AT: Ordinary twisted-pair media adapter for star or bus installation.

All TC6245 versions offer enhanced and compatible modes of operation and coexist with other Thomas-Conrad ARC-CARDS and ARCNET cards manufactured by other vendors.

ABOUT THIS GUIDE

This guide tells you how to set up, install, and troubleshoot all versions of the TC6245 ARC-CARD/AT. After you have installed the TC6245, refer to the *TCNS/ARCNET Driver Installation Guide* (included in the package) for information about installing the adapter driver software.

FEATURES OF THE TC6245

<u>FEATURE</u>	<u>BENEFIT</u>
Node ID switch accessible through mounting bracket	Easy access for setting and changing Node ID.
Activity LED visible through mounting bracket	The LED shows the transmission and reception of data on the cable for quick troubleshooting.
Switch blocks located on the upper edge of the adapter	Switch settings can be checked or changed without removing the adapter from the computer.
Socket for Remote Reset ROM	Permits use in diskless workstations, providing network security.
Zero wait states option	Increase compatibility in wide variety of AT class machines
Block decode option	Helps avoid conflicts with other add-in cards
Enhanced mode of operation	Uses Thomas-Conrad ARCNET drivers for better performance. No I/O address used; increases workstation ability to use additional add-in cards.
Compatible mode of operation	Uses standard ARCNET drivers for popular network operating systems.

CHECKLIST FOR THE EXPERIENCED INSTALLER

If you are familiar with adapter installation, you can use this section to find out about the factory settings on the TC6245 and how to change them.

STEP 1 – LOCATE THE COMPONENTS

Become familiar with the location of the TC6245 components as shown in the following figure.

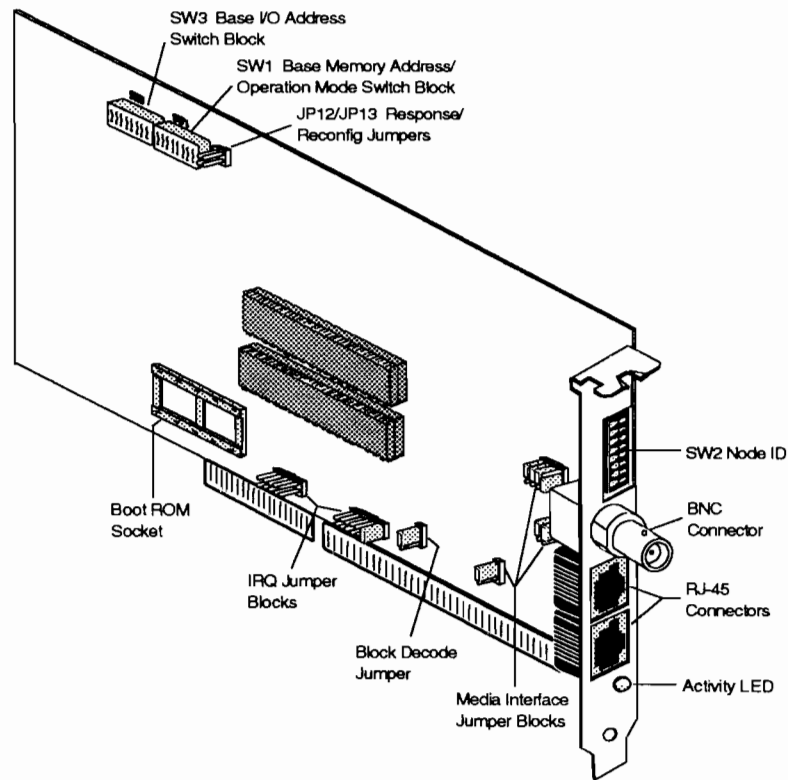


Figure 1-1. TC6245 Components

The TC6245 single media versions do not have media interface jumper blocks since they are factory designed for their specific media configuration. In addition, the TC6245 (coax) and TC6245-HZ (high impedance) adapters have BNC connectors only, and the TC6245-TP+ and TC6245-OTP adapters have RJ-45 connectors only.

STEP 2 –CONFIGURE THE ADAPTER

Operation Mode, Base Memory Address, and Zero Wait States. Set the Enhanced or Compatible Mode of Operation, Base Memory Address, and Zero Wait States on switch block SW1, as shown in Figure 1-2.

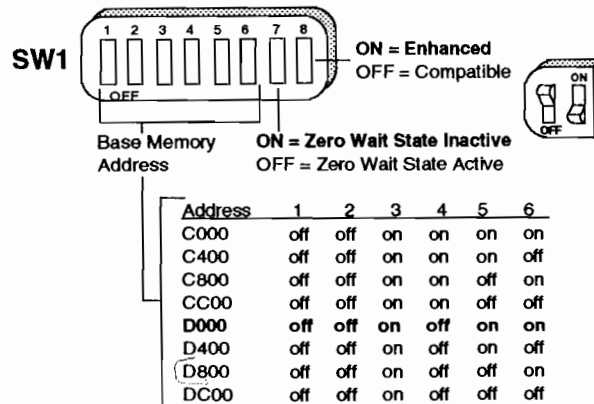


Figure 1-2. Operation Mode, Base Memory Switch, and Zero Wait States Settings

Block Decode Size. The factory setting is 16K. Move the shunt on JP7 to the lower position for 128K mode.

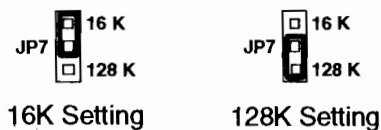


Figure 1-3. Block Decode Jumper Settings

IRQ Settings. The factory setting is 9. See Figure 1-4 for the others.

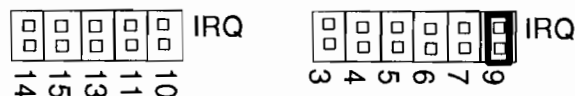


Figure 1-4. IRQ Jumper Block

Base I/O Address. Base I/O is used only when the TC6245 runs in compatible mode. The factory setting is 2E0h. Set the Base I/O address on switch block SW3 as shown in Figure 1-5.

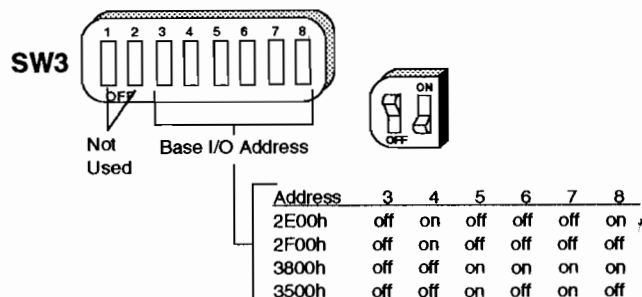


Figure 1-5. Base I/O Address Switch Settings

STEP 3 – SET THE NODE ID

Use switch block SW2 to set the node ID. SW2 represents a binary number with the least significant bit on the left. Switch ON = 0. Switch OFF = 1. To place a switch in the ON position, move it towards the base of the switch block. See Appendix A for possible switch settings.

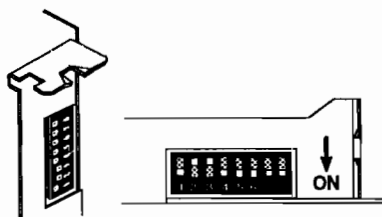


Figure 1-6. Node ID Switch Block

STEP 4 – SET THE ALL-IN-ONE ADAPTER MEDIA INTERFACE

The TC6245-AIO is factory set for standard coaxial cable signaling. Use the following figure to set the jumper blocks for the other options.

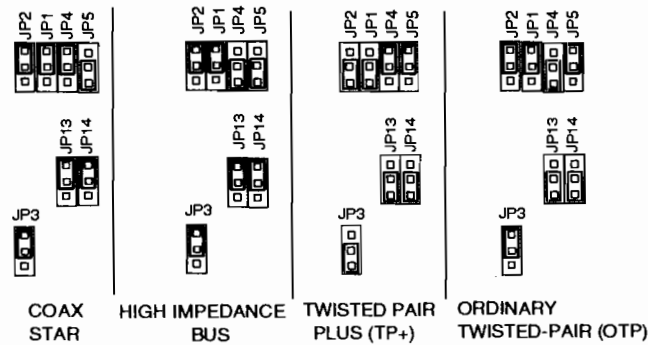


Figure 1-7. All-In-One Media Interface Settings

STEP 5 – INSTALL OPTIONAL REMOTE RESET ROM

Install the Remote Reset ROM if you are setting up a diskless workstation.

STEP 6 – INSTALL THE ADAPTER AND DRIVER

Install the adapter in your computer and connect the cabling. Install the driver software. Refer to the *TCNS/ARCNET Drivers Installation Guide*, supplied with the TC6245, for detailed instructions.

CHAPTER 2

PACKAGING AND SPECIFICATIONS

PACKAGING

The TC6245 adapter box contains the following items:

- ☐ TC6245 ARC-CARD/AT
- ☐ Two (2) 5.25" diskettes, labeled *Thomas-Conrad Network Drivers 1 of 2* and *Thomas-Conrad Network Drivers 2 of 2*
- ☐ TC6245 ARC-CARD/AT User's Guide (this manual)
- ☐ TCNS/ARCNET Drivers Installation Guide
- ☐ In AIO, OTP, and TP+ adapters: one RJ-11, 110 Ω terminator

NOTE

If you are using a diskless workstation, you must order a Remote Reset ROM separately.

ADAPTER SPECIFICATIONS

Dimensions:	9.63 length x 4.2 height, inches 24.5 length x 10.7 height, centimeters
Power Requirements:	+5V DC @ 900 mA -12V DC @ 50 mA
Temperature Range:	Operating: 0°C to 70°C Storage: -45°C to 80°C
Relative Humidity:	Operating: 10% to 90% (non-condensing) Storage: 5% to 95% (non-condensing)
Data Interface:	16-bit, ISA bus
Compatibility:	IBM® AT or compatible computers
Interrupt (IRQ) Options:	3, 4, 5, 6, 7, 9, 10, 11, 12, 14, or 15

Node ID Number 1 through 255

Options:

Network ARCNET protocol, 2.5Mbps transmission

Interface: rate

CABLING SPECIFICATIONS

The TC6245 uses either coaxial or twisted-pair cabling. The following tables show the cabling specifications for all topologies and media configurations.

COAXIAL CABLE

The TC6245 (coax), TC6245-HZ, and the TC6245-AIO use coaxial cabling.

Topology:	Star	Bus (HZ)
Cable type:	RG62/U, 93 Ω	
Connector type:	BNC	BNC (with "T" Connectors)*
Maximum length:	2,000 feet (610 meters) between active devices	1,000 feet (305 meters), 8 nodes per segment,
Minimum length:	None	3 feet (1 meter)
Termination:	None required	93 Ω at each end (93 Ω terminator, non-HZ adapter, or an active hub)

* Thomas-Conrad does not recommend connecting passive hubs to a high impedance bus.

TWISTED-PAIR CABLE

The TC6245-TP+, TC6245-OTP, and TC6245-AIO use twisted-pair cabling.

Signaling Type:	Twisted-Pair Plus	Ordinary Twisted Pair
Cable Type:	105 Ω nominal impedance @ 1MHz, unshielded	
Connector type:	RJ-45, 8 position, or RJ-11, 6 position (center 2 conductors used)	
Maximum length:		
Star topology:	800 feet (244 meters) between active devices	400 feet (122 meters) between active devices
Bus topology:	800 feet (244 meters) 32 nodes per segment	400 feet (122 meters) 10 nodes per segment
Minimum Bus Length:	6 feet (2 meters)	
Termination:		
Star topology:	RJ-11, 110 Ω	
Bus topology:	RJ-11, 110 Ω , or an active hub	

CHAPTER 3

INSTALLING THE TC6245 ADAPTER

The TC6245 ARC-CARD/AT comes with switch and jumper blocks that allow you to set the following configuration components for an ARCNET network:

- ☐ Operating Mode
- ☐ Base Memory Address
- ☐ Zero Wait States
- ☐ Block Decode Size
- ☐ Interrupt Request Line (IRQ)
- ☐ Node ID
- ☐ Base I/O Address (compatible mode only)
- ☐ Media Interface Options (All-In-One adapter only)
- ☐ Response and Reconfiguration Timeouts

The jumper and switch blocks allow you to configure the adapter so that it will interact with other hardware in the computer. In most cases, the factory settings will enable the adapter to function properly; however, if these settings cause a conflict with other option cards installed in the same computer, make the changes described in this chapter.

Once you have configured the TC6245, install the adapter according to the instructions in the computer's documentation. Then install and configure the adapter driver software according to the instructions in the *TCNS/ARCNET Drivers Installation Guide*.

CAUTION

Discharges of static electricity from your hands into your TC6245 can damage its components. Keep the TC6245 in its anti-static bag until you are ready to use it.

LOCATE THE TC6245 COMPONENTS

The TC6245 family of five adapters offers three media interfaces: All-In-One, BNC for coaxial cable, and RJ-45 for twisted-pair cable.

TC6245-AIO

Figure 3-1 shows the location of the connectors, switch blocks, jumpers, and Remote Reset ROM socket for the TC6245-AIO.

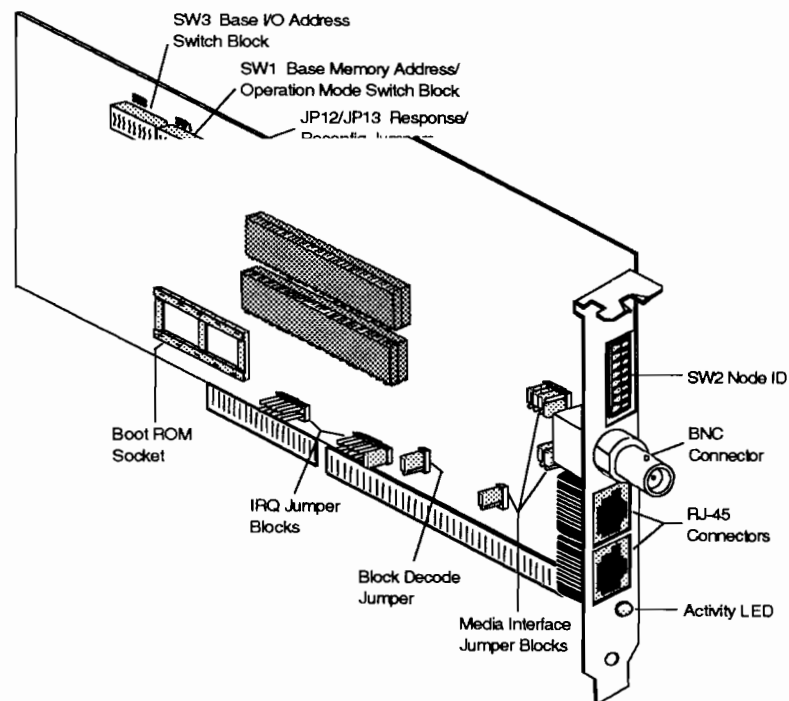


Figure 3-1. TC6245-AIO Components

TC6245 and TC6245-HZ

Figure 3-2 shows the location of the components of the TC6245 and TC6245-HZ. The connectors, switch blocks, jumpers, and Remote Reset ROM socket are in the same location as on the AIO adapter. The media interface jumper blocks, however, are not present on the single media adapters.

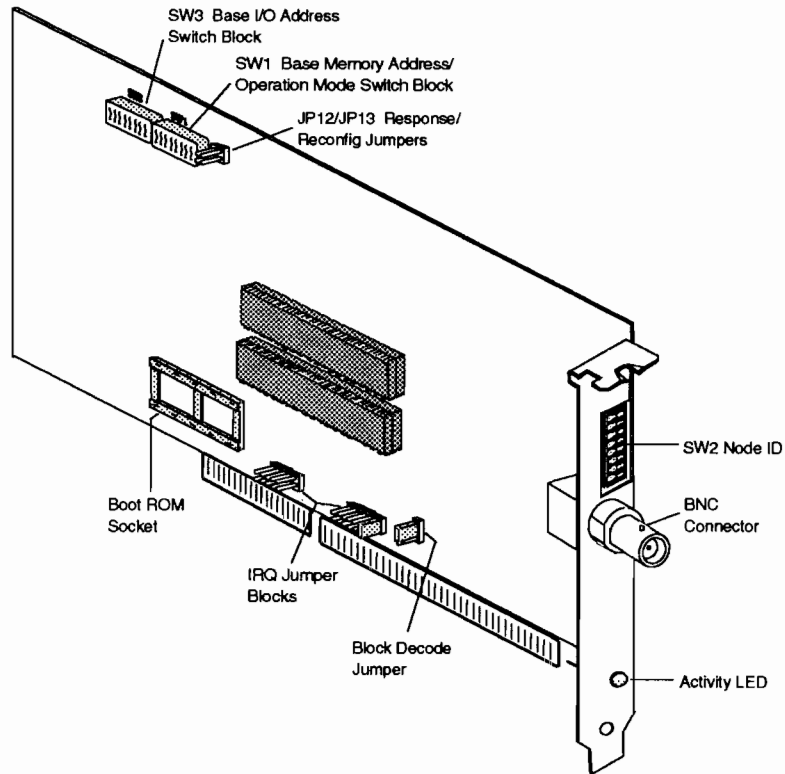


Figure 3-2. TC6245 and TC6245-HZ Components

TC6245-TP+ and TC6245-OTP

Figure 3-3 shows the location of the components of the TC6245-TP+ and TC6245-OTP. The connectors, switch blocks, jumpers, and Remote Reset ROM socket are in the same location as on the AIO adapter. The media interface jumper blocks, however, are not present on the single media adapters.

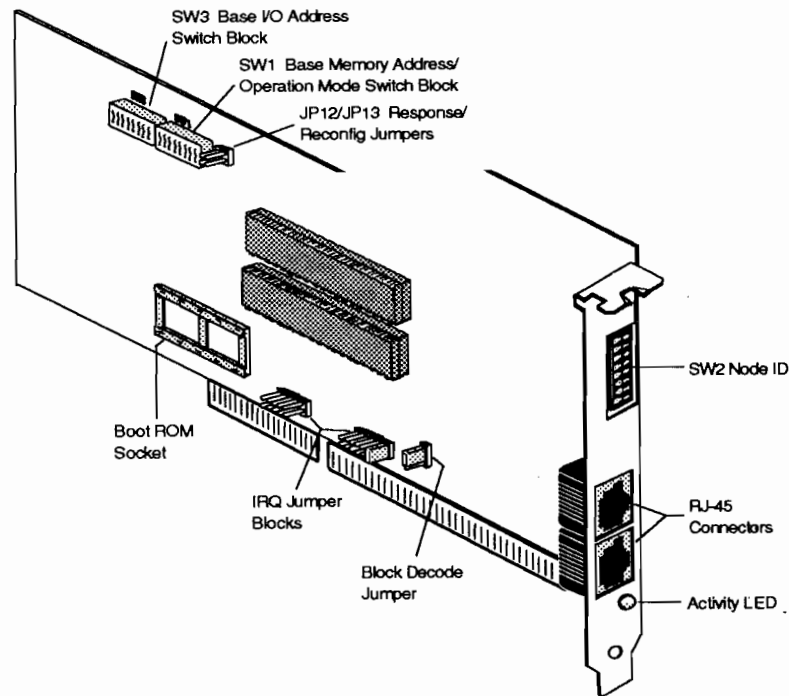


Figure 3-3. TC6245-TP+ and TC6245-OTP Components

CHOOSE OPERATING MODE

The TC6245 has two modes of operation, enhanced and compatible. The adapter is factory set to the enhanced mode: switch 8 of switch block SW1 is set in the ON position. To set the adapter to compatible mode, change switch 8 to the OFF position, as shown in Figure 3-4.

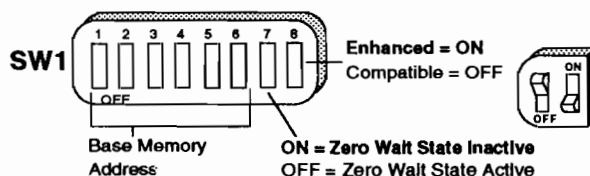


Figure 3-4. Operating Mode Switch Settings

ENHANCED MODE

Choose the enhanced mode to optimize communication performance and minimize memory address conflicts with other hardware installed in your computer. When the TC6245 is set to the enhanced mode, you must use Thomas-Conrad's drivers. The accelerated drivers offer expanded memory addressing options and faster data transfer speed. Adapters using Thomas-Conrad accelerated drivers must be installed in both the file server and the workstation in order to achieve accelerated performance. In enhanced mode the adapter's base I/O is memory mapped.

COMPATIBLE MODE

Choose the compatible mode when using the TC6245 with other manufacturers' drivers. When the TC6245 is set to the compatible mode of operation, it will operate with any Novell® RX-Net™ compatible driver, or with Thomas-Conrad's GXL™/ARC driver, a global, high-performance network shell driver for ARCNET adapters. In compatible mode, the adapter's base I/O must be manually set on switch block SW3.

CHOOSE CONFIGURATION OPTIONS

In order for the hardware to run with the software, configuration options must be set on the TC6245 adapter and match the software. Refer to the *TCNS/ARCNET Drivers Installation Guide* to determine which configuration options are available for your particular network operating system. Some drivers and network operating systems do not support all the option settings provided on the TC6245.

SELECT BASE MEMORY ADDRESS

The base memory address is the address at which the computer's system bus will access the adapter. The base memory address for each TC6245 is factory set to D000h.

NOTE

Some expanded memory management programs use the D000h-D3FFh range and may fail to recognize the RAM used by adapter. If this is the case, add an exclusion command (typically, to the CONFIG.SYS file) that states the beginning and ending addresses you are using for your adapter.

To select the base memory address, locate switch block SW1 and set the switches according to the table below. If none of these addresses will work in a particular workstation or server, call Thomas-Conrad Technical Services for assistance.

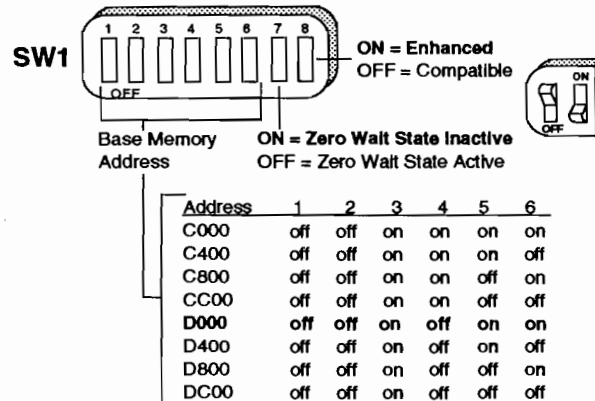


Figure 3-5. Base Memory Address Switch Settings

When operating the TC6245 in the compatible mode, refer to the appropriate driver vendor's instruction manual for details on selecting the base memory address.

SET ZERO WAIT STATES

Some AT-class computers use zero wait states to achieve faster bus speeds. Set the wait state with switch 7 on switch block SW1. The factory setting is Zero Wait States Inactive (switch 7 in the ON position). If your computer can use zero wait states, change the switch to the OFF (Zero Wait States Active) position, as shown in Figure 3-6.

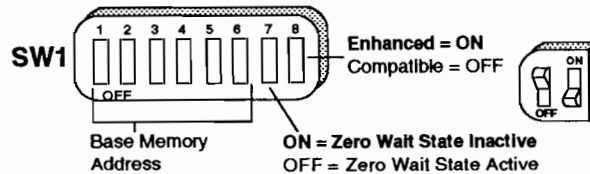


Figure 3-6. Zero Wait States Switch Settings

SELECT BLOCK DECODE SIZE

Jumper JP7 selects between 16K and 128K base memory block decoding size. It is factory set to 16K mode.

If other adapters in your computer, such as a 16-bit VGA adapter, decode base memory in 128K blocks, you must also set your TC6245 to 128K blocks, as shown in Figure 3-7.

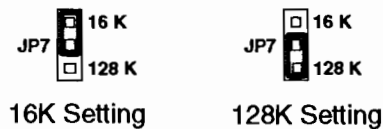


Figure 3-7. Block Decode Jumper Settings

SELECT WORKSTATION IRQ

Jumper blocks labeled IRQ 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, and 15 are used to connect the interrupt request line from the TC6245 to one of the AT interrupt request lines. The TC6245 is factory set to IRQ 9.

If your workstation has other add-in cards installed, be sure the IRQ for the TC6245 does not conflict with the IRQ for any add-in cards. If it does, reset the IRQ by lifting the shunt off the IRQ9 setting and placing it on another IRQ jumper pin.

The following table lists IRQs commonly used by other devices:

<u>IRQ #</u>	<u>Partial List of Other Uses</u>
9	Some EGA and VGA display adapters, AST Corp. cards, IBM 3278/79 Emulator Adapter, IBM PC Network Adapter (primary address).
3	IBM PC Network Adapter (alternate address), IBM Asynchronous Communications Adapter (alternate address), IBM SDLC Communications Adapter, IBM BSC Adapter (alternate address).
4	Communication port COM1.
5	Hard disk drives.
6	Diskette drives.
7	Printers.
11	NetWare Disk Coprocessor Board (DCB).
12	NetWare Disk Coprocessor Board (DCB).

To select the IRQ, install the jumper on the appropriate pair of pins as shown in the following illustration.



Figure 3-8. IRQ Jumper Block

SELECT NODE ID

You must assign your TC6245 a unique node ID in the range of 1 through 255. Node ID 0 is reserved by the ARCNET protocol, and should not be assigned to a TC6245. Each station on a network must have a unique node ID.

To specify the node ID for your TC6245, locate switch block SW2 on the end bracket of the adapter (refer to Figure 3-1). Set the switches using Appendix A, "Switch Block SW2 Settings".

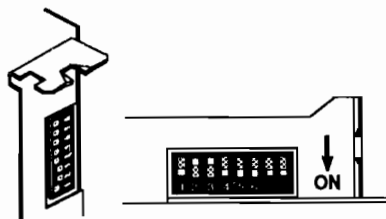


Figure 3-9. Node ID Switch Block

SW2 represents a binary number with the least significant bit on the left. Switch ON = 0. Switch OFF = 1. To place a switch in the ON position, move it towards the base of the of the switch block.

SELECT BASE I/O ADDRESS

Assign a base I/O address *only* if you are using the TC6245 in compatible mode. (The adapter memory-maps base I/O when running in enhanced mode.) The base I/O address is factory set to 2E0h. To select the base I/O address, locate switch block SW3 (refer to Figure 3-1) and set switches 3 through 8 according to the table below.

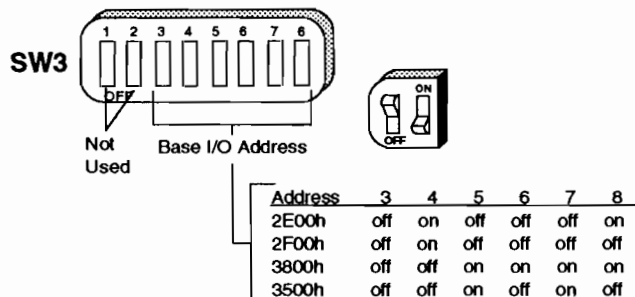


Figure 3-10. Base I/O Address Switch Settings

SET MEDIA JUMPERS ON THE TC6245-AIO

The TC6245 All-In-One adapter can be configured to use any of the following four types of wiring media.

- ☐ Coaxial (star topology)
- ☐ High Impedance Coaxial (bus topology)
- ☐ Ordinary Twisted Pair
- ☐ Twisted Pair Plus™

You can configure your wiring media by setting the three-pin jumper block clusters as shown in Figure 3-11.

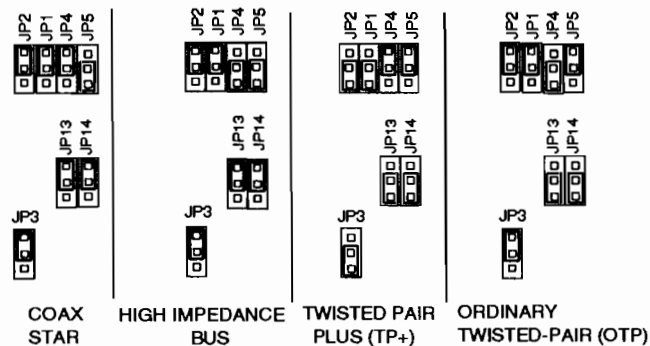


Figure 3-11. TC6245-AIO Media Interface Settings

WARNING

Do not mix OTP and TP+ adapters on the same network. The adapters or other equipment could be damaged.

INSTALL REMOTE RESET ROM

The TC6245 provides a socket for a Remote Reset ROM for use in booting a diskless workstation. The ROM is automatically enabled once it is installed. Use the Thomas-Conrad Remote Reset ROM (part number TC9021) for adapters set to enhanced mode. A TC6245 set to compatible mode will use most Remote Reset ROMs available from other vendors.

Install the ROM by matching the notch on the ROM with the notch on the appropriate socket, as shown in Figure 3-12. You must also create a boot image file when you configure the software. Refer to your network operating system documentation for further information.

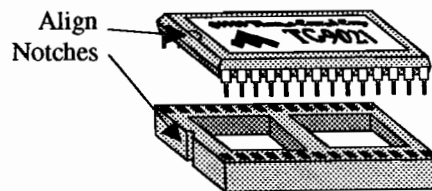


Figure 3-12. Remote Reset ROM and Socket

RESPONSE AND RECONFIGURATION TIMEOUTS

When the TC6245 is shipped from the factory, it does not have a shunt on jumper blocks JP6 or JP7. These blocks are used only in cases where the end-to-end network span exceeds 20,000 feet. Shunts for these settings must be purchased separately.

CAUTION

All adapters on the network must have the response and reconfiguration timeout jumpers set the same. Failure to set all adapters the same will disable the network.

INSTALL THE ADAPTER

To install the TC6245 in your computer, follow these steps:

WARNING

To avoid the risk of equipment damage or personal injury, remove the power cord from the computer, peripherals, and electrical outlets **BEFORE** you install the TC6245.

<u>STEP</u>	<u>ACTION</u>
1	Unplug the power cord and all necessary device cables. Remove the cover of the computer as described in the computer's documentation.
2	Choose an expansion slot for the TC6245. Remove the slot cover from the rear of the chassis.
3	Slide the TC6245 adapter into the slot you have chosen. Be sure the gold edge connector is pushed completely into the socket.
4	Fasten the TC6245 adapter securely in the slot with a screw through the top of the bracket. Be sure the connector on the mounting bracket is accessible from the back of your computer.
5	Replace the computer's cover.
6	Re-connect the power cord and all device cables that were removed and attach the network cable to the connector on the TC6245.
7	Install the ARCNET driver software. Refer to the <i>TCNS/ARCNET Drivers Installation Guide</i> , supplied with the TC6245 for detailed instructions.

COMMON INSTALLATION PROBLEMS

Once you install the TC6245 adapter and ARCNET driver in your workstation, you should be able to boot up the computer and attach to

the network. You may, however, receive an error message. The following table lists the most common error messages on Novell networks and the action you can take to correct the problem.

<u>ERROR MESSAGE:</u>	<u>SOLUTION:</u>
"ARC-CARD communications adapter missing or not working properly."	<ol style="list-style-type: none">1. Adapter is not connected to system bus. Verify that the adapter is fully seated in the bus connection.2. IPX file does not have the same configuration settings as the adapter. Verify that the configuration settings are the same for both the IPX and the adapter.3. Memory conflict exists. Disable any shadow video, shadow RAM, or memory caching. Change base memory to non-conflicting address.4. Memory manager is not excluding adapter memory address. Add exclude statement as required by memory manager software.
"File Server Not Found."	<ol style="list-style-type: none">1. Cabling is not connected or is defective. Verify that all connections are made at both the workstation and at any hubs and that the cable is not broken.2. IRQ and switch settings conflict with other cards. Verify that no conflict exists.
"Error Initializing LAN"	<ol style="list-style-type: none">1. Possible conflict in node ID settings. Check all nodes of the LAN for duplicate IDs.

Contact Thomas-Conrad Technical Services at 800-332-8683, 24 hours-a-day, 7 days-a-week, at no charge.

APPENDIX A

SWITCH BLOCK SW2 SETTINGS

This appendix lists the settings switch block SW2 for the node ID. Switch block SW2 represents a binary number with the least significant bit on the left. Switch ON = 0. Switch OFF = 1. See Figure 3-1 for the location of the SW2 switch block.

Station Address		SW2 Switch Setting							
Dec.	Hex	1	2	3	4	5	6	7	8
000	00	DO NOT USE - Reserved by ARCNET							
001	01	off	on	on	on	on	on	on	on
002	02	on	off	on	on	on	on	on	on
003	03	off	off	on	on	on	on	on	on
004	04	on	on	off	on	on	on	on	on
005	05	off	on	off	on	on	on	on	on
006	06	on	off	off	on	on	on	on	on
007	07	off	off	off	on	on	on	on	on
008	08	on	on	on	off	on	on	on	on
009	09	off	on	on	off	on	on	on	on
010	0A	on	off	on	off	on	on	on	on
011	0B	off	off	on	off	on	on	on	on
012	0C	on	on	off	off	on	on	on	on
013	0D	off	on	off	off	on	on	on	on
014	0E	on	off	off	off	on	on	on	on
015	0F	off	off	off	off	on	on	on	on
016	10	on	on	on	on	off	on	on	on
017	11	off	on	on	on	off	on	on	on
018	12	on	off	on	on	off	on	on	on
019	13	off	off	on	on	off	on	on	on
020	14	on	on	off	on	off	on	on	on
021	15	off	on	off	on	off	on	on	on
022	16	on	off	off	on	off	on	on	on
023	17	off	off	off	on	off	on	on	on
024	18	on	on	on	off	off	on	on	on

Station Address		SW2 Switch Setting							
Dec.	Hex	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
025	19	off	on	on	off	off	on	on	on
026	1A	on	off	on	off	off	on	on	on
027	1B	off	off	on	off	off	on	on	on
028	1C	on	on	off	off	off	on	on	on
029	1D	off	on	off	off	off	on	on	on
030	1E	on	off	off	off	off	on	on	on
031	1F	off	off	off	off	off	on	on	on
032	20	on	on	on	on	on	off	on	on
033	21	off	on	on	on	on	off	on	on
034	22	on	off	on	on	on	off	on	on
035	23	off	off	on	on	on	off	on	on
036	24	on	on	off	on	on	off	on	on
037	25	off	on	off	on	on	off	on	on
038	26	on	off	off	on	on	off	on	on
039	27	off	off	off	on	on	off	on	on
040	28	on	on	on	off	on	off	on	on
041	29	off	on	on	off	on	off	on	on
042	2A	on	off	on	off	on	off	on	on
043	2B	off	off	on	off	on	off	on	on
044	2C	on	on	off	off	on	off	on	on
045	2D	off	on	off	off	on	off	on	on
046	2E	on	off	off	off	on	off	on	on
047	2F	off	off	off	off	on	off	on	on
048	30	on	on	on	on	off	off	on	on
049	31	off	on	on	on	off	off	on	on
050	32	on	off	on	on	off	off	on	on
051	33	off	off	on	on	off	off	on	on
052	34	on	on	off	on	off	off	on	on
053	35	off	on	off	on	off	off	on	on
054	36	on	off	off	on	off	off	on	on
055	37	off	off	off	on	off	off	on	on
056	38	on	on	on	off	off	off	on	on
057	39	off	on	on	off	off	off	on	on
058	3A	on	off	on	off	off	off	on	on
059	3B	off	off	on	off	off	off	on	on

Station Address		SW2 Switch Setting							
<u>Dec.</u>	<u>Hex</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
060	3C	on	on	off	off	off	off	on	on
061	3D	off	on	off	off	off	off	on	on
062	3E	on	off	off	off	off	off	on	on
063	3F	off	off	off	off	off	off	on	on
064	40	on	on	on	on	on	on	off	on
065	41	off	on	on	on	on	on	off	on
066	42	on	off	on	on	on	on	off	on
067	43	off	off	on	on	on	on	off	on
068	44	on	on	off	on	on	on	off	on
069	45	off	on	off	on	on	on	off	on
070	46	on	off	off	on	on	on	off	on
071	47	off	off	off	on	on	on	off	on
072	48	on	on	on	off	on	on	off	on
073	49	off	on	on	off	on	on	off	on
074	4A	on	off	on	off	on	on	off	on
075	4B	off	off	on	off	on	on	off	on
076	4C	on	on	off	off	on	on	off	on
077	4D	off	on	off	off	on	on	off	on
078	4E	on	off	off	off	on	on	off	on
079	4F	off	off	off	off	on	on	off	on
080	50	on	on	on	on	off	on	off	on
081	51	off	on	on	on	off	on	off	on
082	52	on	off	on	on	off	on	off	on
083	53	off	off	on	on	off	on	off	on
084	54	on	on	off	on	off	on	off	on
085	55	off	on	off	on	off	on	off	on
086	56	on	off	off	on	off	on	off	on
087	57	off	off	off	on	off	on	off	on
088	58	on	on	on	off	off	on	off	on
089	59	off	on	on	off	off	on	off	on
090	5A	on	off	on	off	off	on	off	on
091	5B	off	off	on	off	off	on	off	on
092	5C	on	on	off	off	off	on	off	on
093	5D	off	on	off	off	off	on	off	on
094	5E	on	off	off	off	off	on	off	on

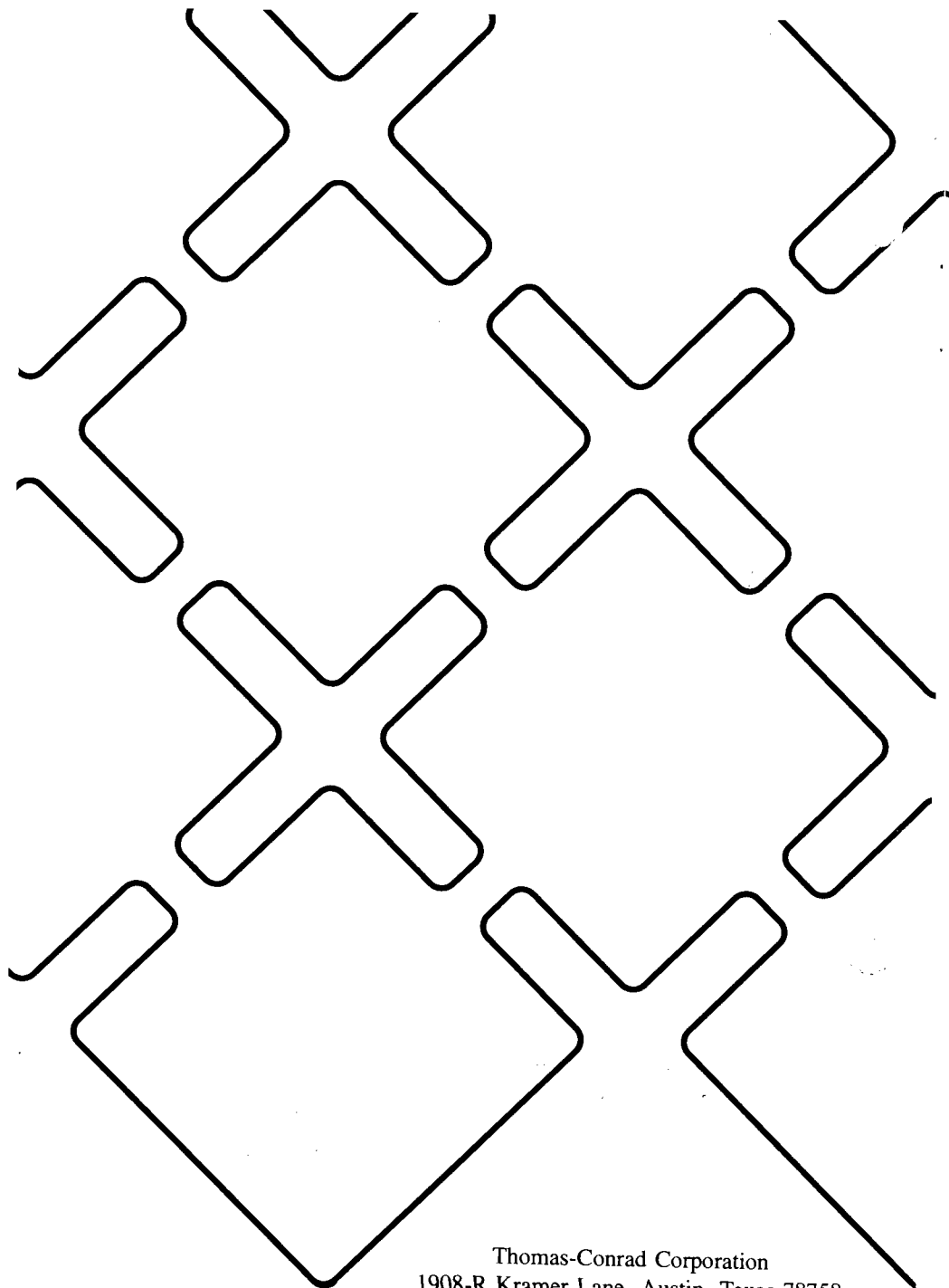
Station Address		SW2 Switch Setting							
Dec.	Hex	1	2	3	4	5	6	7	8
095	5F	off	off	off	off	off	on	off	on
096	60	on	on	on	on	on	off	off	on
097	61	off	on	on	on	on	off	off	on
098	62	on	off	on	on	on	off	off	on
099	63	off	off	on	on	on	off	off	on
100	64	on	on	off	on	on	off	off	on
101	65	off	on	off	on	on	off	off	on
102	66	on	off	off	on	on	off	off	on
103	67	off	off	off	on	on	off	off	on
104	68	on	on	on	off	on	off	off	on
105	69	off	on	on	off	on	off	off	on
106	6A	on	off	on	off	on	off	off	on
107	6B	off	off	on	off	on	off	off	on
108	6C	on	on	off	off	on	off	off	on
109	6D	off	on	off	off	on	off	off	on
110	6E	on	off	off	off	on	off	off	on
111	6F	off	off	off	off	on	off	off	on
112	70	on	on	on	on	off	off	off	on
113	71	off	on	on	on	off	off	off	on
114	72	on	off	on	on	off	off	off	on
115	73	off	off	on	on	off	off	off	on
116	74	on	on	off	on	off	off	off	on
117	75	off	on	off	on	off	off	off	on
118	76	on	off	off	on	off	off	off	on
119	77	off	off	off	on	off	off	off	on
120	78	on	on	on	off	off	off	off	on
121	79	off	on	on	off	off	off	off	on
122	7A	on	off	on	off	off	off	off	on
123	7B	off	off	on	off	off	off	off	on
124	7C	on	on	off	off	off	off	off	on
125	7D	off	on	off	off	off	off	off	on
126	7E	on	off	off	off	off	off	off	on
127	7F	off	off	off	off	off	off	off	on
128	80	on	on	on	on	on	on	on	off
129	81	off	on	on	on	on	on	on	off

Station Address		SW2 Switch Setting							
Dec.	Hex	1	2	3	4	5	6	7	8
130	82	on	off	on	on	on	on	on	off
131	83	off	off	on	on	on	on	on	off
132	84	on	on	off	on	on	on	on	off
133	85	off	on	off	on	on	on	on	off
134	86	on	off	off	on	on	on	on	off
135	87	off	off	off	on	on	on	on	off
136	88	on	on	on	off	on	on	on	off
137	89	off	on	on	off	on	on	on	off
138	8A	on	off	on	off	on	on	on	off
139	8B	off	off	on	off	on	on	on	off
140	8C	on	on	off	off	on	on	on	off
141	8D	off	on	off	off	on	on	on	off
142	8E	on	off	off	off	on	on	on	off
143	8F	off	off	off	off	on	on	on	off
144	90	on	on	on	on	off	on	on	off
145	91	off	on	on	on	off	on	on	off
146	92	on	off	on	on	off	on	on	off
147	93	off	off	on	on	off	on	on	off
148	94	on	on	off	on	off	on	on	off
149	95	off	on	off	on	off	on	on	off
150	96	on	off	off	on	off	on	on	off
151	97	off	off	off	on	off	on	on	off
152	98	on	on	on	off	off	on	on	off
153	99	off	on	on	off	off	on	on	off
154	9A	on	off	on	off	off	on	on	off
155	9B	off	off	on	off	off	on	on	off
156	9C	on	on	off	off	off	on	on	off
157	9D	off	on	off	off	off	on	on	off
158	9E	on	off	off	off	off	on	on	off
159	9F	off	off	off	off	off	on	on	off
160	A0	on	on	on	on	on	off	on	off
161	A1	off	on	on	on	on	off	on	off
162	A2	on	off	on	on	on	off	on	off
163	A3	off	off	on	on	on	off	on	off
164	A4	on	on	off	on	on	off	on	off

Station Address		SW2 Switch Setting							
<u>Dec.</u>	<u>Hex</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
165	A5	off	on	off	on	on	off	on	off
166	A6	on	off	off	on	on	off	on	off
167	A7	off	off	off	on	on	off	on	off
168	A8	on	on	on	off	on	off	on	off
169	A9	off	on	on	off	on	off	on	off
170	AA	on	off	on	off	on	off	on	off
171	AB	off	off	on	off	on	off	on	off
172	AC	on	on	off	off	on	off	on	off
173	AD	off	on	off	off	on	off	on	off
174	AE	on	off	off	off	on	off	on	off
175	AF	off	off	off	off	on	off	on	off
176	B0	on	on	on	on	off	off	on	off
177	B1	off	on	on	on	off	off	on	off
178	B2	on	off	on	on	off	off	on	off
179	B3	off	off	on	on	off	off	on	off
180	B4	on	on	off	on	off	off	on	off
181	B5	off	on	off	on	off	off	on	off
182	B6	on	off	off	on	off	off	on	off
183	B7	off	off	off	on	off	off	on	off
184	B8	on	on	on	off	off	off	on	off
185	B9	off	on	on	off	off	off	on	off
186	BA	on	off	on	off	off	off	on	off
187	BB	off	off	on	off	off	off	on	off
188	BC	on	on	off	off	off	off	on	off
189	BD	off	on	off	off	off	off	on	off
190	BE	on	off	off	off	off	off	on	off
191	BF	off	off	off	off	off	off	on	off
192	C0	on	on	on	on	on	on	off	off
193	C1	off	on	on	on	on	on	off	off
194	C2	on	off	on	on	on	on	off	off
195	C3	off	off	on	on	on	on	off	off
196	C4	on	on	off	on	on	on	off	off
197	C5	off	on	off	on	on	on	off	off
198	C6	on	off	off	on	on	on	off	off
199	C7	off	off	off	on	on	on	off	off

Station Address		SW2 Switch Setting							
Dec.	Hex	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
200	C8	on	on	on	off	on	on	off	off
201	C9	off	on	on	off	on	on	off	off
202	CA	on	off	on	off	on	on	off	off
203	CB	off	off	on	off	on	on	off	off
204	CC	on	on	off	off	on	on	off	off
205	CD	off	on	off	off	on	on	off	off
206	CE	on	off	off	off	on	on	off	off
207	CF	off	off	off	off	on	on	off	off
208	D0	on	on	on	on	off	on	off	off
209	D1	off	on	on	on	off	on	off	off
210	D2	on	off	on	on	off	on	off	off
211	D3	off	off	on	on	off	on	off	off
212	D4	on	on	off	on	off	on	off	off
213	D5	off	on	off	on	off	on	off	off
214	D6	on	off	off	on	off	on	off	off
215	D7	off	off	off	on	off	on	off	off
216	D8	on	on	on	off	off	on	off	off
217	D9	off	on	on	off	off	on	off	off
218	DA	on	off	on	off	off	on	off	off
219	DB	off	off	on	off	off	on	off	off
220	DC	on	on	off	off	off	on	off	off
221	DD	off	on	off	off	off	on	off	off
222	DE	on	off	off	off	off	on	off	off
223	DF	off	off	off	off	off	on	off	off
224	E0	on	on	on	on	on	off	off	off
225	E1	off	on	on	on	on	off	off	off
226	E2	on	off	on	on	on	off	off	off
227	E3	off	off	on	on	on	off	off	off
228	E4	on	on	off	on	on	off	off	off
229	E5	off	on	off	on	on	off	off	off
230	E6	on	off	off	on	on	off	off	off
231	E7	off	off	off	on	on	off	off	off
232	E8	on	on	on	off	on	off	off	off
233	E9	off	on	on	off	on	off	off	off
234	EA	on	off	on	off	on	off	off	off

Station Address		SW2 Switch Setting							
Dec.	Hex	1	2	3	4	5	6	7	8
235	EB	off	off	on	off	on	off	off	off
236	EC	on	on	off	off	on	off	off	off
237	ED	off	on	off	off	on	off	off	off
238	EE	on	off	off	off	on	off	off	off
239	EF	off	off	off	off	on	off	off	off
240	F0	on	on	on	on	off	off	off	off
241	F1	off	on	on	on	off	off	off	off
242	F2	on	off	on	on	off	off	off	off
243	F3	off	off	on	on	off	off	off	off
244	F4	on	on	off	on	off	off	off	off
245	F5	off	on	off	on	off	off	off	off
246	F6	on	off	off	on	off	off	off	off
247	F7	off	off	off	on	off	off	off	off
248	F8	on	on	on	off	off	off	off	off
249	F9	off	on	on	off	off	off	off	off
250	FA	on	off	on	off	off	off	off	off
251	FB	off	off	on	off	off	off	off	off
252	FC	on	on	off	off	off	off	off	off
253	FD	off	on	off	off	off	off	off	off
254	FE	on	off	off	off	off	off	off	off
255	FF	off	off	off	off	off	off	off	off



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